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AN SYNOPTIC OVERVIEW ON AUTOIMMUNE DISORDERS AND ITS MANAGEMENT

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ABSTRACT

In this modern era, everything that has good side it should contain a bad side also. In the same way as our immune system plays an important role in our life to be healthy and the same immune system can give birth to some chronic diseases also. Autoimmune diseases rise when the immune system fails to identify the foreign matter and the immune cells of the body. Immune system can cause diseases in different ways.

Autoimmune diseases can be of three types which are described below. Out of nearly 80 Autoimmune diseases Some are curable and some are incurable. Autoimmune diseases involves alopecia, Rheumatoid Artheritis, Type-1 Diabetes, Sarcoidosis, HIV etcetera. Diabetes can be of two types 1. Type -1 diabetes and type -2 diabetes. Alopecia can lead to hair fall in two ways. Some of the autoimmune diseases are elaborated with their symptoms and their possible managements as of a child with diabetic ketoacidosis

Keywords: Autoimmune diseases, alopecia areata, Rheumatoid Artheritis, Type-1 Diabetes, Sarcoidosis, Immunity

INTRODUCTION

Immunity-

It is the power of body by which the different parts of body fights with the disease causing materials or Pathogens. Every person has different immune system but as a general rule it is strong during

adulthood. Once an antibody has been produced in over body some copy to this antibody remains in our body [16]. If the same antigen appears again in our body it can dealt easy because antibody are present in our body. For example- like chickenpox

you get it once than body store its antibody and after next time its destroy is called immunity [2, 10].

Type of immunity- There are three type of immunity.

- Innate immunity
- Adaptive immunity
- Passive immunity

1. Innate-

It is also known as native immunity, its resistance to infection that an individual possesses by virtue of his or her genetic and constitutional make up. It is not affected by prior contacts with mco or immunization it is response is more general and non specific if the pathogen manages to dodge the innate immune system adaptive or immunity kicks in [16].

2. Adaptive-

It is also known as acquired the resistance that human acquires during life is known as adaptive. It could be named as immunological memory because when we came across any disease and then we got vaccinated for the same disease our immunity system remembers the antigens and so it can kill the enemies by remembering them to protect our body from the previous disease [11].

3. Passive-

Passive immunity can be called as borrowed immunity because it is taken from the other sources. Let's take an example of a child, the power to fight

against some diseases is taken from mother during breast feeding in the early age of a child and before the birth of a child it could be taken through placenta [18, 19].

Autoimmune disease-

When any Organism's immune system fails in recognizing its own parts which results in an immune response against the Tissues and cells of the organism [22]. This type of misunderstanding done by the immune system results in diseased conditions which is known as Autoimmune disease [15, 38].

- Mechanism of Autoimmune disease
 - Autoimmune disease can happen if -:
 - Functional imbalance of suppressor helper T-cells.
 - Molecular mimicry
 - By pass of CD4 helper T-cell tolerance
 - Polyclonal lymphocyte activation.
 - Misleading towards own antibodies [1, 39]

HISTORY

Auto immune diseases came in existence in mid in 20th century sympathetic ophthalmia and endophthalmitis phaco-anaphylactica and many other conditions were proposed as auto immune disorders [17]. In starting of the 20th century auto immune diseases was inspected as most unimaginable disease. Due to auto immune

diseases human system was capable of self harm and the first symptoms were allergy and anaphylaxis. The major problem was how to understand the cause why the human system cannot differentiate foreign from self [36]. A new term "Horror Autotoxicus" was placed in notice By Paul Ehrlich. In ancient times it was believed that a normal body can't response against its own cells and tissues. In 1950s studies of chronic thyroid led to the knowledge of Auto-immune disease. Seminal studies of chronic thyroiditis and a series of clinical laborator general acceptance of autoimmune disease. Ophthalmic investigators give insite how medical ideas can take shape [37]. The history of autoimmune disease spans centuries but Warwick and Ian Mackay was the first who invested and summeried history of autoimmune disease. There are dozen of autoimmune disease but diabetes 1 was focused by Anderson and Mackey. Diabetes was 1st time report in 1880s by French physician Etienne Lancereaux it was considered one of the rare disease but these day's this is very common. Although there is not cure for type 1 diabetes but some proposed diet and regular medication help to control it. Infection disease is another autoimmune disease & was firstly investigated in 1700s. This was one of the most dangerous diseases. To detect autoimmune disease a questionnaire was

conducted. In this series patients were asked to tell about 33 autoimmune diseases. For each disease they have to answer in yes or no. If the patient says yes then they were asked about their age, family history and from how many days they had that type of symptoms. Further open ended questions allowing inclusion of additional information. The study shows that 5% per 100,000 or higher were infected with autoimmune disease like RA.

TYPES AND FACTORS AFFECTING AUTOIMMUNE DISEASES

These are broadly classified in two categories according to the principal clinico-pathogenic feature of each disease [42].

1. Systemic autoimmune disease—

I.e. Rheumatoid Arthritis, Polyarteritis, Nodosa Sjogren's syndrome

2. Local autoimmune disease—

- Endocrinologic - type 1 Diabetes's
- Gastrointestinal
- Dermatologic
- Haematologic- Haemolytic Anaemia
- Neurologic - Myasthenia Gravi's

3. Hemocytolytic Autoimmune Disease

For example-

- Autoimmune Leukopenia
- Autoimmune thrombocytopenia
- Autoimmune Hemocytolytic Aemia [43]

Factors Elevating Autoimmunity-

1. Genetic factor-

As some characteristics or habits are inherently transferred to the child from the patients similarly the genes of disease can also be transferred to the young ones.

Some autoimmune disease can be inherited by single gene mutation like syndrome of APECED.

Some autoimmune diseases are multigenic which can produce the abnormal phenotype.

Sometimes these hereditary can create sever problems to the next generation [8].

2. Environmental factor-

Autoimmune disease can be modified, caused or promoted by environment. It could be a serious factor that can initiate or determine the type and time of any autoimmune disorder [26]. There are many more environmental factors that have been proposed to promote autoimmune diseases, like MS including climate, stress, occupation, cigarette smoking, and diet.

3. Sex hormones-

Out of all autoimmune affected people 80% are women which consists of arthritis, rheumatoid arthritis and gout etcetera [40]. The source of energy and also hormones is food, drugs product which can also produce steroidal effect. This steroidal effect can elevate immune cell proliferation that can improve or inhibit the response of immunity system of the body [3].

4. Stress –

According to the study more than 100,000 people diagnosed with stress related disorders and compared their tendency to develop autoimmune disease after one year 126,000 of their siblings and another millions people who did not have stress related disorders [30].

OVERVIEW AND TREATMENT

There are nearly 80 type of autoimmune diseases some autoimmune diseases are below-

1. Type1 Diabetes-

It is an autoimmune disease which is mediated by T-cell that can destruct pancreatic B-cell. Destruction of B-cell causes insulin deficiency [31]. It was also known by the name of insulin dependent diabetes or we can say juvenile diabetes. Lack of insulin producing cell in pancreas causes Type 1 Diabetes. Males and Females are equally affected by this disease [5].

Symptoms-

1.1 Early symptoms-

- Excessive Urination
- Extreme thirst
- Weight loss without appetite loss
- Weakness and fatigue
- Confusion, Nausea & vomiting
- Ketocidosis

1.2 Chronic symptoms-

- Retinopathy
- Neuropathy

- Nephropathy
- Hypoglycemia
- Heart and artery disease
- Dizziness, Trembling, Irritation
- Sudden sweating [46]

Treatment-

- Educate people
- Insulin therapy should be given
- Glycemic control monitoring
- Diet and meal planning
- Prevention and early direction of compilation
- Slidishare pediatrics

Drugs- Insulin drugs could be given.

2. Chronic urticaria-

If urticaria is persisting for more than 6 weeks that will be known as chronic urticaria. Chronic urticaria can be caused by IgG and anti-IgE receptors. Activation of mast cells (basophils) causes histamine release and the histamine is responsible for the inflammation which is responsible for the urticaria [32].

- Physical urticaria [Difficult to diagnose]
- Chronic Idiopathic urticaria.
- Urticaria Vasculitis

Urticaria treatment-

- Remove cause
- Training about urticaria
- Treat symptoms
- Four week eliminating diet

Drugs -

- H1- Antihistamine

- 1st generation - Diphenhydramine
- 2nd generation - Cetirizine
- H2 Antihistamine- Ranitidine
- Systemic corticosteroids- Glucocorticoids.
- Cyclosporine- Rapid and long term action than systemic corticosteroids

3. Alopecia areata –

It is an auto-immune disease which results in loss of hair. Alopecia is very common disease for women and men. It can affect all persons whether they are aged and children. It could affect the pregnant ladies [28].

The loss of hairs can be in two ways-

- Hair losses occur but regrowth of new hairs.
- Permanent loss of hairs.

According to the site of loss of hairs -

- *Alopecia areata* [round bolt patches on scalp]
- *Alopecia totalis* [loss of all facial and scalp hairs]
- *Alopecia universalis* [loss of body hairs]
- *Alopecia postpartum* [temporary loss of significant hairs following pregnancy]

Symptoms-

- Hair loss
- Hair falls usually in small patches on the scalp.

- Hair lose in all body parts like eyebrows, beard, eyelashes

Treatment-

Alopecia Arcata - It can be treated via traditional medical therapies like -

- Immunotherapy - It is a second line treatment.
 - Diphenylcyclopropenone
 - Squaric acid dibutylester.
 - Rarely used treatment :-
 - Minoxide.
 - Systemic immunomodulators.
 - Topical Corticosteroids –
 - Regulation of inflammation
- Immediate recovery of hair follicles [21]

4. Sarcoidosis-

It is type of autoimmune disease in this disease inflammation usually in your lungs, lymph nodes and skin. Its affect any organ of your body. This disease is mainly done in African Americans. It can affect any age group people [35].

Symptoms-

- Cough
- Weight loss
- Night sweats
- Fatigue
- Shortness of breath

Types of sarcoidosis-

- Pulmonary sarcoidosis
- Extrapulmonary sarcoidosis-
 - Skin related

- Nervous system related
- Kidney related
- Eyes related
- Joints related etcetera.

Treatment-

- First therapy- glucocorticoids (oral corticosteroids)
- In refractory cases- Biological agents and glucocorticoids sparing agent
- Immunosuppressants- methotrexate and azathioprine
- Anti-TNF- alpha antibody

5. Auto immune hepatitis-

It is a type of autoimmune disease in this disease chronic inflammatory disease of the liver. It occurs by itself. Its classified as type I & type II type I is occurs at any age mostly in women. Type II is not common it is affecting mostly adult's girls [27].

Symptoms-

- Aching joints
- Itching
- Nausea

Types of Autoimmune hepatitis-

- Acute
- Chronic

Autoimmune Hepatitis treatment:-

- Standard of care- Normalize IgG and triasauinas.
- Monotherapy- Predinsolone
- Combination therapy-

- Steroids-
Prednisolone, Budesonide
- Azothioprine

6. Multiple sclerosis (MS)-

It is a type of autoimmune disease in this disease the immune system is attacks the lining of the intestines, causing episodes [27].

Symptoms-

- Fatigue
- Stiffness and weakness
- Mobility problems
- Numbness and tingling

Categories of Multiple Sclerosis-

- Relapsing - remitting
- Secondary progressive multiple Sclerosis
- Primary progressive multiple sclerosis
- Progressive Relapsing multiple sclerosis

Treatment-

- Beta Interferone –Avonex, Betaseron, Extavia
- Gltrianer Acitate (Copaxone)
- Mitoxautrone (Novautrone)
- Natalizumab (Tysabri)
- Fingolimod (Gilenya)
- Dalfampridine (Ampyra)
- Azathioprine (Imuran)
- Methotrexate
- Mycophenolate Mofetil (collcept)

7. Rheumatoid arthritis (RA)-

It is type of autoimmune disease in this disease pain swelling, stiffness and lose the function of your joints [12, 23]. Its effects commonly in the fingers and wrist. In a study we find that women are more effective as compare than man. According to CDC (Centers for disease control and prevention) this symptoms usually affect the same joints on both side of the body. Symptoms come and go.

Symptoms-

- Redness, warmth in joint
- Stiffness in joint
- Soreness in joint

Risk factors-

According to CDC notes people with higher risk of RA are mostly females, they cannot given birth, Obesity, most common in age of 60 year or above [23].

Treatment-

While, there is no permanent treatment for RA but there are some ways that can help to reduce the pain of RA.

- Relive pain

Inflammation reduce to the joints [45]

CONCLUSION

Although autoimmune disease is rare. The immune system has different checks and balances to prevent itself from destructive host tissues. If your immune system is strong it can regulate autoimmune disease. As there are different classes of pathogens like bacteria viruses are the cause of

triggering self reactive in human responses. But RA autoimmunity is the strongest. In March 2001 scientists came together to discuss how to diagnose and treat autoimmune disease. Many biochemical markers, measuring disease markers and future planning in methodology bring new insight in pathogenesis but even these study also unable to predict about localized organ damage. On other hand generic factor to autoimmune disease is different to describe. Other factor that is responsibility for these diseases is modern techniques and life style. Sometimes body is so much relaxed that it could not function properly. Improper functioning of body may lead to the opposite autoimmune response. Autoimmune diseases are sometimes so dangerous that it can lead to death of a particular person. Autoimmune disease involves near about 80 diseases in different body parts.

Different cells can cause different problem in the body. Due to some modern techniques diseases can be cured if they are recognized immediately. As they become chronic it will be difficult to cure the problem. In this modern era a lot of drugs and other remedies are prescribed for the treatment of a disease.

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